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Senior Distributed Energy Specialist

Key Qualifications

Twenty – one years in the renewable energy field: Technology, site analysis, system design, installation, project management, personnel management; project finance, power sales contracts, permits and power generation legislation; kW - MW electric supply company and service company development; public and private capital funding for independent power projects. Developed and implemented technical strategies for introducing renewable energy into existing power systems (primarily small satellite grids), parallel with political/business strategies to induce use/acceptance of the solutions, all within multi - cultural environments. Prime experience in:

- Wind energy: (including project feasibility, site design, land agreements, community wind, wind-diesel hybrids, wind turbine design, manufacture, resource assessment, and balance of systems equipment. AC/DC systems - 2 kW to 3 MW)
- Photovoltaic (residential/commercial/industrial. Resource assessment, standalone lighting, emergency rescue, telecommunications, navigation, distributed generation)
- Power Systems (conventional reciprocating generation, micro turbines, power quality control, renewable/conventional system integration, power collection and distribution)
- Managed international commercial and development projects, managed government and private R & D projects. Directed business divisions with P & L, staff responsibility.

Education

1985 B.Sc. Agricultural Engineering, University of Vermont, Burlington, VT.
1980 College Preparatory; Naval officer training certificate, Tabor Academy, Marion, Mass.

Additional course work:
1985 Specialized in renewable energy/methane digestion
1985 Minor degree: Business Management
1987 Graduate courses in International business and finance/MBA track
1996 Certified operator, class 1 waste water treatment plant

Countries of Work Experience

Anguilla, Antarctica, Argentina, Australia, Barbados, Brasil, Canada, Canadian Arctic, Costa Rica, Denmark, Ecuador, Greece, Guatemala, India, Israel, Netherlands Antilles, Norway, Spain, UK

Professional Experience

August 2008 – Current – Director New Generation Partners

New Generation Partners is a vertically integrated Renewable Energy developer and consultancy group. Founded to pursue community scale (100 kW – 15MW) projects of various technologies. Tasks performed include: business building, feasibility, JV formation, project planning, and execution. Consulting services provided to utilities, municipalities, private entities.

January 2007 – August 2008 – Senior Projects Manager FirstWind, Newton, Ma./Montpelier, VT. FirstWind is a leading vertically integrated large windfarm developer, with over 5000MW in development and/or construction. I led the execution of projects in the northeast. Created and managed a staff of four in Montpelier. Managed four projects in development/and under construction totaling 261 MW's (over $400m). These were in NY, Maine, VT. Responsibility was broad, including significant feasibility, development, engineering, coordination, media, local relations as well as classic project management tasks.

July 2005 –November 2006 - **COO**, Earth Turbines, Inc. Hinesburg, Vermont. Design, development and manufacture of small wind turbines. Launched company into the small grid connected/net metered residential wind turbine market; 2.5 – 10 kW AC wind turbines. Lead and sole employee effectively managing start-up; including all operations, market development, business organization, contract, and field work, beta sites, vendor development and part of technical design team. Earth Turbines was formed in July 05' by David Blittersdorf, Founder of NRG Systems, Inc. A change of plans for David Blittersdorf in October 06' allowed him to take on the company.

July 2005 – March 2006 - **Associate Consultant** to ESS of E. Providence, Rhode Island. Consulting for the Mass.Tech.Collaborative (MTC) under their Community Wind Program. Technical and wind project lead. Working as a team along with Steve Wood of ESS and Jonathan Winer of La Capra, the ESS team provided various stages of wind development/feasibility studies for several towns/municipalities in Massachusetts. I had been carrying out this work at Northern Power Systems, and took this contract with me upon departure. I phased out of the consulting work as Earth Turbines, Inc. became my sole focus.

Feb. 2004 – July 2005 – **Sales Manager, Wind Technology -** Northern Power Systems, Waitsfield, Vermont. As the company has grown significantly, this position was created to take on the full commercialization of the various wind technology developments and NW100 product within a new entity: Power Technology Group (this new group reported directly to the public parent: DESC). My role as lead business development, responsible for all commercial sales (non DOE programs) Responsibility for a wide range of activities; Business plan, market focus, value creation, direct sales, proposal generation, modeling, program management for the introduction of Northern's NW100 wind turbine. Tasks also included consulting, feasibility studies, and special projects.

- NW100 product commercialization
- Polar program, net metering, and state incentive outreach

- Jan. 2003 –Feb. 2004 – **Technical Director, Renewable Integration Group**. Northern Power Systems. Leading the technical side of business development, and sales effort. Responsible for staff of two. Focused on engaging the emerging market for integrating renewable technologies (wind, PV) into conventional grids and commercial, industrial facilities: 50kW to 3 MW range. This focus included hybrid renewable generation, with reciprocating engines and micro turbines, along with small distributed wind turbines and wind farms. My role included working directly with Dan Reicher (previous Undersecretary of Energy @ DOE) who assumed my position as Director, when he joined Northern.

- Nov. 97' – December 2002 –**Director, Renewable Integration** Group. Responsible for P&L, and sales, engineering/Program Management - staff of five. Group was managed as an individual business unit within Northern Power Systems.
    - Rooftop grid connected solar systems sold in Calif., Mass., Ct.,
    - Landfill gas project with 3MW Solar turbines in Wisc.
    - NW100 turbine to utility on Kotzebue, AK.

  Business model development, sales channels, JV pursuit, market positioning, business plan creation, multitude of tasks while this nascent market sector was pushed forward.

June 96- Nov. 97' **Facilities Manager,** Shelburne Farms Resources Inc., Shelburne VT. Responsible for Victorian era buildings and modern systems on innovative 1400 acre non - profit educational institute with 200 head dairy/cheese plant/24 bed inn. Responsible for remodeling, upgrades, daily operations/maintenance, energy efficiency, wood chip systems, wind energy project, dairy design and waste systems, and electric vehicles project. Staff of two. Hands -on systems and equipment maintenance, on the spot problem solving, personnel/project management. Owners engineer role for multi million dollar Breeding Barn project at Southern Acres.

February 1991 - May 1996, **Senior Staff**, New World Power Corporation Waitsfield, VT. Manufacturer/Developer (the first publicly traded company to apply Independent Power Producer model to renewable energy generation) {New World Power Corp. acquired Northern Power Systems Inc.(with which I was an employee) in 1993}: wind turbine design and construction, standalone renewable and hybrid power system design, installation. Worldwide offices (Energy marketing alliance with Westinghouse Power Generation Business Unit) Responsible for village power program; personnel, technical direction, project development. Project Manager for several international industrial projects and domestic R & D contracts. Sales Engineer involved in design analysis and sales of remote PV/wind/hybrid power systems

- January 1994 - May 1996, **Technical Director**, New World Village Power Company, (subsidiary of New World Power Corp.) Responsible for startup of subsidiary and initial business development of kWh power sales contracts (50 kW - 5 MW) in remote villages/islands. Developed analysis tools, political/legislative strategy to utilize large scale IPP model in the blossoming international village power market. Carried out site analysis, system integration design, financial analysis, client meetings, government and agency relations, permit process. Most project partners were members of First Nations or Native Corporations.

  Several of the projects worked on or fully developed;
    - Ontario, Canada; three Cree villages along western shore of James Bay. Total of 5.5 MW of wind/diesel generation capacity to be installed. Joint venture with First Nations would reduce energy costs and transfer generation from Ontario Hydro to First Nations.
    - St. Paul Island (Bering Sea), Alaska: JV with Native Corporation to generate and distribute power to commercial and industrial users. Two phase project; 525 kW and 3 MW wind/diesel system.
    - St. George Island (Bering Sea), Alaska: JV with Native Corporation to generate and distribute power to commercial and industrial users. 400 kW wind/diesel project
    - Rio Negro, Argentina: JV with provincial utility to finance, design, install and train local operators to run eight individual wind/diesel village power systems

- Anguilla, BWI: 3 MW wind farm project to integrate with quasi - public diesel fired utility. Effort focused on legality of IPP to operate and sell power within existing legislation.

Tasks in this period also included direct system sales, village power market studies (primarily Central, South America) and R & D project management, presentations at technical Conferences

- Ceara, Brasil: 50 kW wind/PV/utility intertie system
- Boulder, CO. NREL Wind Test Center: 50 kW wind/diesel system for model verification and training.
- NREL small grid wind integration contract; Principal investigator: Field tests, refinement of control algorithms on rotary converter to maintain system stability during high amounts of wind penetration.
- Alaska Science & Technology Foundation, Anchorage; Project Manager: Rotary converter, arctic shelter and system control development related to wind/diesel system integration in remote bush communities in Western Alaska.
- Sandia National Labs, New Mexico; Project Manager: Power Processing Center contract to carry out hardware/software development on wind/PV integration into small grids. Focus of work was on PLC controls for rotary converter and battery buffer sizing.

- March 1992 - December 1993, **Sales Engineer** at Northern Power Systems carrying out a myriad of systems design, technical sales support, proposal writing, client training, sales, field service, troubleshooting.

  - Design, construction of Micro Power Pack (PV powered emergency and remote AC power system used in Mt. Everest ascent for base camp power/rain forest studies in South, Central America
  - Design, construction, and PM of portable diving lab for marine life studies in Antarctica; 20' shelter on skids able to fit in C-131 aircraft with integral solar thermal heat, PV power system and ice access hatches.
  - Specification of wind power systems for Coast Guard; 3 kW - HR3 wind turbine, batteries/controls/shelter for remote/harsh climate sites on Alaskan coast
  - Specification, construction of PV/Propane power system for fiber optic amplification in remote desert for Sprint Telephone Inc.
  - Design, management of PV powered FAA obstruction lighting system for transmission towers, New Mexico Utility
  - Sale, specification of wind turbines, controls, site design for telephone repeaters GuaTel (Guatemalan Telephone)

- September 1991 - February 1992 **Field Project Manager**
  Brisbane, Australia; Chevron Niugini - Kutubu Oil Field Project; seven PV/Diesel valve Stations for Papua New Guinea. In country Management of fabrication, final design, hands on problem solving and customer acceptance testing.

- February 1991 - September 1991 **Sales Liaison**
  Proposal writing for large telecom and industrial bids, drafting (hand and CAD), one line diagrams, market research, direct sales.

June 1990 - January 1991, **Director of Marketing**, Atlantic Orient Corporation, Norwich, VT.

Wind turbine development, R & D contractor and wind turbine manufacturer. Key management in engineering group, while carrying out entire sales and marketing functions during development of 50 kW AC, wind turbine for distributed generation, village power, and small wind farm applications. Market studies for remote wind/diesel applications and distributed generation. Contributed and worked directly at engineering tasks including; design criteria, fabrication methods, shipping constraints, and wind/diesel system integration. Proposal writing and engineering report filing for NREL contracts. Also introduced sales/representation of a 50 watt wind turbine for international remote and marine markets. Turbines used instead of PV in small, subsistence lighting/radio installations where PV was not effective.

June 1985 - June 1990, **Director, World Wide Sales**, NRG Systems, Inc. Hinesburg, VT.
Wind energy resource assessment equipment manufacturer, world leader in the development and sales of; towers, sensors (anemometers, direction vanes) data loggers and ancillary equipment for wind/PV energy resource data recording. Began as an electronics technician upon graduation, involved in design, fabrication, assembly methods, and special purpose production equipment. Field installation of equipment, field and shop service/retrofit of several locally owned residential wind turbines, Developed international marketing and sales focus in company, worked directly with wind farm developers in California, Denmark, India during rapid expansion and maturing of wind energy industry.

- Design/development of wind direction vanes for wind turbine yaw control
- Tilt up - Anemometer/meteorological tower development up to 140'.
- Significant equipment sales to the PPC (Public Power Corporation) of Greece, Government of Israel, Gov't of India, UNDP for South America.
- Specialized data logger equipment for Wind pump tests Botswana; ARD/AID project

Training/Short Courses Presented (abbrev. list)

1. Vermont wind power; policy, legislation, ruling, politics. Testifying before legislature, PSB, Governors panels, and Governors Council on Education
2. Wind/Diesel system integration - Private/NREL contracts; Alaska/Brasil/Canadian Arctic. (potential customers, utilities, agencies)
3. Wind Energy Integration and Utility Use (two day)- NRECA sponsored workshop in Costa Rica
4. Wind Turbine Siting and Integration (two day)- Private/NREL contract Wind
5. Resource equipment & assessment (one day) -Private/DOE/AWEA contracts; Israel/Curacao, Bonaire N.A./Barbados/ India/Greece/Canada/United Kingdom/U.S.
6. AWEA (American Wind Energy Association) general conferences, pre-conference workshops, session chair AWEA panels, reverse trade missions, and European Wind Energy conferences.
7. Electric Vehicle technology (one day) - Career Expo - Essex Vocational school, Essex, VT.

Consulting

1. VPPSA – 7.5 – 10 MW wind farm pre-feasibility report –focused on ability to permit and construct an economic project.
2. Massachusetts, Massachusetts Technology Collaborative (MTC); Community Wind Program: MW scale wind power feasibility, site design, costing, logistics.

3. Anguilla, BWI., Caribbean Wind Inc.; 3 MW wind farm integration onto 5MW Diesel grid, energy calculations, financial models, system stability issues in order to determine best legal/contract structure as negotiations continued.
4. Block Island, RI. BPG Inc. Potential wind integration on 3 MW Diesel grid; Site analysis review, energy calculations, environmental and aesthetic determiners, system integration with existing diesel plant, grid stability and seasonal operational scenario.
5. India, U.S. Windpower Inc. - Technology transfer/Manufacturing potential in India, possible manufacturing partners, market interpretation, power production law review.

Membership (current/past)

Vermont DPS: Energy planning: Mediated Modeling 09/05 –present
Sen. Leahy/VCRD – Energy Council: Energy & Economic Development 06/06 –present
Renewable Energy Vermont – current board member, past Chairman
American Wind Energy Association, Board of Directors 1994
Northeast Sustainable Energy Association
Society of Arctic Travelers
New England Electric Auto Association

Related Skills/Interests

Chairman (2003 -2005), Renewable Energy Vermont, non-profit industry trade group
Reviewer, State of Vermont Energy Policy Guidelines for Municipalities
EVermont - Electric Vehicle project partner (also personally owned two electric trucks)
Hands on engineer, enjoy human interaction/teaching, presenting, advocacy
Well traveled, internationally/multi cultural oriented, and accustomed to on the spot ideas/solutions.

Personal

Married, one stepdaughter
Planning Commission, Buel's Gore
Shareholder, subcommittee member; Mad River Glen Cooperative Ski Area
Designed, and built current house complete with off grid wind/diesel power system
Extensive sailing; including transatlantic, officer aboard tall ship
Own, restoration of several old wooden sailing vessels.
Own, operate, converted diesel vehicles for veggie oil, and biodiesel